

REMARKS/ARGUMENTS

Claims 1-5, 9-14 and 17- 25 are pending herein. Claims 1-5 have been withdrawn from further consideration. Claims 6-8, 15 and 16 have been cancelled hereby without prejudice or disclaimer. Claims 9-14, 17, 20-22 and 25 have been amended to correct matters of form and for clarification purposes only. Independent claim 9 has been rewritten to recite the features of claim 16 and to further recite that the surface layer has an open porosity of at least 11 volume percent. Applicants respectfully submit that support for rewritten claim 9 can be found, for example, in paragraph [0057] and Table 4 of the specification, and that no new matter has been added.

Examiner McNeil is thanked for the courtesies extended to Applicants' representative during a telephonic interview on March 16, 2006, the substance of which is incorporated below.

1. Applicants affirm the provisional election made with traverse on November 28, 2005 to prosecute the Group II claims (6-25), and acknowledge that claims 1-5 have been withdrawn as being drawn to a non-elected invention.

2. The rejection of claims 7 and 8 under the judicially created doctrine of obviousness-type double patenting is noted, but deemed moot in view of the cancellation of those claims. Accordingly, Applicants respectfully request that the above rejection be reconsidered and withdrawn.

3. The §112, first paragraph rejection of claims 9-25 is noted, but deemed moot in view of rewritten claim 9 submitted above.

More specifically, Examiner McNeil asserted that a surface layer having the specific characteristics recited in claim 9 was not enabled because claim 9 did not recite a composition of the surface layer (see Office Action, page 4, lines 13-16). Applicants respectfully submit, however, that rewritten independent claim 9 now

recites specific compositional features for the surface layer (as previously recited in claim 16). During the telephonic interview, Examiner McNeil tentatively agreed that rewriting independent claim 9 in this manner would be sufficient to overcome the §112, first paragraph rejection. Accordingly, Applicants respectfully request that the above rejection be reconsidered and withdrawn.

4. Claims 6-7, 9, 13-20, 23 and 24 were rejected under §102(a) over Otsuki. Applicants respectfully submit that this rejection is moot with respect to claims 6 and 7 in view of the cancellation of those claims. Applicants respectfully traverse this rejection with respect to claims 9, 13-20, 23 and 24.

Independent claim 9 recites a member effective for reducing particle generation comprising a substrate and a surface layer on the substrate. The surface layer comprises a yttria-alumina complex oxide having an α value in a range of 50 to 700 calculated according to the following formula, wherein $\alpha = (\text{a specific surface area measured by Krypton adsorption method (cm}^2\text{/g)}) \times (\text{a thickness of the surface layer (cm)}) \times (\text{a bulk density of the surface layer (g/cm}^3\text{)})$. The surface layer also has an open porosity of at least 11 volume percent.

The present invention provides a member that is effective in reducing particle generation and which has a high capacity for capturing and retaining particles that may be generated in a semiconductor processing system. This is achieved, at least in part, by providing a substrate having, for example, a yttria-alumina complex oxide film surface layer which has an open porosity of at least 11 volume percent and an α value in a range of 50 to 700.

Applicants respectfully submit that the importance of providing an α value, i.e., an index value indicating the amount and diameter of open pores per unit surface area, in the claimed range is set forth in paragraphs [0049]-[0053] of the present specification, for example. Further, paragraph [0057] and Table 4 of the present specification also explain that providing an open porosity of at least 11 volume percent is important in order to improve the holding capacity of unwanted processing by-

products and particles within the pores of the surface layer. For instance, in Example C8 in Table 4, which had an open porosity of 11 volume percent, no particles were measured (i.e., all of the particles deposited in the pores were retained; see paragraph [0010] of the present specification for a more detailed explanation of the particle measurement testing). Applicants respectfully submit that the data in Table 4 also clearly demonstrates that samples having an open porosity of less than 11 volume percent did not satisfactorily retain the particles (see also paragraphs [0102] to [0104]).

Examiner McNeil asserted that "Otsuki teaches a film made of a material commensurate with the claims" and asserted that the characteristics of Otsuki's material are "expected to also be similar" (Office Action, page 5, last two lines). Applicants respectfully submit, however, that this is incorrect. That is, Applicants respectfully submit that the YAG layer of Otsuki does not necessarily exhibit the open porosity or α characteristics of the yttria-alumina complex oxide surface layer recited in independent claim 9.

For example, Applicants respectfully submit that paragraph [0044] of Otsuki explains that the thickness of the sprayed film is important in view of maintaining a specific breakdown voltage. According to Fig. 2 of Otsuki, the breakdown voltage of the film should be as high as possible. Along those lines, Applicants respectfully submit that one of ordinary skill in the art would readily understand that providing open pores in the surface film would considerably decrease the breakdown voltage in a manner that would be contrary to the teaching in Otsuki. Indeed, since Otsuki is specifically directed toward providing a film having a high breakdown voltage, Applicants respectfully submit that the film in Otsuki would not necessarily (and *preferably* would not at all) exhibit the claimed open porosity and α characteristics.

Moreover, Applicants respectfully submit that Otsuki does not provide any enabling disclosure that would be sufficient for one of ordinary skill in the art to produce a surface layer having the claimed characteristics. For example, while Otsuki discloses a sprayed film, Applicant respectfully submits that the sprayed film constitutes an alumina-yttria compound, and Otsuki does not disclose that yttria and

alumina are sprayed as a mixed powder of powdery materials (as recited, for example, in dependent claim 20). Applicants respectfully submit that, absent the otherwise undisclosed spraying step, it would not have been possible for one of ordinary skill in the art to provide a film having the claimed characteristics based on the teaching in Otsuki, much less obvious.

For at least the foregoing reasons, Applicants respectfully submit that all claims pending herein define patentable subject matter over Otsuki, and respectfully request that the above rejection be reconsidered and withdrawn.

6. Claims 6, 7 and 9-24 were rejected under §102(e) over Yamada '921. Applicants respectfully submit that this rejection is moot with respect to claims 6 and 7 in view of the cancellation of those claims. Applicants respectfully traverse this rejection with respect to claims 9-24.

The features of independent claim 9 are outlined in section 5 above.

Examiner McNeil asserted that the yttria-alumina complex layer formed on an alumina substrate and having a porosity of 18%, as described in paragraph [0070] of Yamada, corresponds to the claimed surface layer. Applicants respectfully submit, however, that this layer is not a surface layer at all, but instead clearly constitutes an intermediate layer. Moreover, Applicants respectfully submit that paragraph [0071] of Yamada immediately goes on to explain that a yttria film is then formed (by spraying) on that intermediate layer.

In addition, Applicants respectfully submit that Yamada specifically discloses that the surface film which is sprayed on the intermediate layer is then thermally treated to produce a test piece having a relative density of 97% (e.g., 3% porosity at best; see, for example, paragraph [0072] of Yamada and the first sentence of paragraph [0060]). Indeed, Applicants respectfully submit that, contrary to the present invention, the teaching in Yamada is actually directed toward producing a member with a surface layer that has a reduced porosity in an effort to improve corrosion resistance and reduce particle generation. In view of the above, Applicants

respectfully submit that Yamada does not disclose the claimed surface layer having the claimed open porosity and α characteristics. Not only would Yamada's film not necessarily exhibit the claimed characteristics, Yamada's film was most likely designed so as to not exhibit the claimed characteristics.

For at least the foregoing reasons, Applicants respectfully submit that all claims pending herein define patentable subject matter over Yamada. Accordingly, Applicants respectfully request that the above rejection be reconsidered and withdrawn.

Applicants respectfully request that the PTO acknowledge receipt and consideration of the references filed in the Information Disclosure Statement filed January 20, 2006.


If Examiner McNeil believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, she is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

March 16, 2006

Date

Respectfully submitted,



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